

INTERNATIONAL SEARCH REPORT

International Application No.

CT/JP2004/004495

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04L7/04 H04L7/10 H04L27/00 H04L27/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	<p>KELLER T ET AL: "ORTHOGONAL FREQUENCY DIVISION MULTIPLEX SYNCHRONISATION TECHNIQUES FOR WIRELESS LOCAL AREA NETWORKS"</p> <p>15 October 1996 (1996-10-15), IEEE INTERNATIONAL SYMPOSIUM ON PERSONAL, INDOOR AND MOBILE RADIO COMMUNICATIONS, XX, XX, PAGE(S) 963-967 , XP002063294</p> <p>page 963, right-hand column, last paragraph - page 964, left-hand column, paragraph 1</p> <p>page 964, right-hand column, paragraph 3; figures 2,3</p> <p style="text-align: center;">----- -/--</p>	<p>15-18</p> <p>1,5, 8-10,19, 20</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

• Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

23 June 2004

Date of mailing of the International search report

29/06/2004

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 049 577 A (GOTHE MARLO RENE ET AL) 11 April 2000 (2000-04-11) column 3, line 29 - line 55 column 4, line 1 - line 3 column 4, line 14 - line 23 figure 4	15,17
A	----- EP 0 556 807 A (NIPPON ELECTRIC CO) 25 August 1993 (1993-08-25) page 4, line 5 - line 29 page 4, line 41 - page 5, line 10 page 5, line 42 - page 6, line 58 figure 2	1,8-10
A	----- D'ARIA G ET AL: "SYNCHRONIZATION TECHNIQUES AND VITERBI EQUALIZERS FOR TDMA MOBILE RADIO" TECHNICAL REPORTS - CSELT, TURIN, IT, vol. 17, no. 2, 1 April 1989 (1989-04-01), pages 125-131, XP000575030 ISSN: 0393-2648 page 127, left-hand column, paragraph 3; figure 4	1,8-10, 15-20
A	----- WO 99/53666 A (BADRI SABAH ; LIPP STEFAN (DE); EBERLEIN ERNST (DE); BUCHHOLZ STEPHAN) 21 October 1999 (1999-10-21) abstract	1-20
A	& PATENT ABSTRACTS OF JAPAN vol. 2000, no. 22, 9 March 2001 (2001-03-09) & JP 2001 136149 A (NIPPON TELEGR & TELEPH CORP <NTT>), 18 May 2001 (2001-05-18) cited in the application abstract	
A	----- MEHLAN R ET AL: "EFFICIENT PREAMBLE DESIGN FOR DIGITAL DMSK PACKET SYNCHRONIZATION" SERVING HUMANITY THROUGH COMMUNICATIONS. SUPERCOMM/ICC. NEW ORLEANS, MAY 1 - 5, 1994, INTERNATIONAL CONFERENCE ON COMMUNICATIONS (ICC), NEW YORK, IEEE, US, vol. VOL. 2, 1 May 1994 (1994-05-01), pages 918-922, XP000438640 page 918, right-hand column, paragraph 2 - page 920, left-hand column, paragraph 2 figures 1,2	1,8-10, 15,17
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>MILLER M ET AL: "AN INNOVATIVE SYNCHRONIZATION PREAMBLE FOR UHF MILSATCOM" MILCOM 1999. IEEE MILITARY COMMUNICATIONS CONFERENCE PROCEEDINGS. ATLANTIC CITY, NJ, OCT 31 - NOV. 3, 1999, IEEE MILITARY COMMUNICATIONS CONFERENCE, NEW YORK, NY : IEEE, US, vol. VOL. 2 OF 2 CONF. 18, 31 October 1999 (1999-10-31), pages 1338-1342, XP000922185 ISBN: 0-7803-5539-3 page 1340, left-hand column, paragraph 2 - page 1341, left-hand column, paragraph 1 -----</p>	15,17

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14

Frequency synchronization using correlation of a synchronization waveform occurring at least twice and average phase difference of the correlation and transition of absolute phase of the correlation

1.1. claims: 15-20

Generation of a synchronization symbol occurring at least twice

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Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6049577	A	11-04-2000	AU 4097499 A	13-12-1999
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			HK 1036710 A1	31-10-2003
			JP 3429747 B2	22-07-2003
			JP 2002511710 T	16-04-2002
			TW 417370 B	01-01-2001
			ZA 9803645 A	04-11-1998